A VISION FOR NEW HAMPSHIRE'S ESTUARIES 3

The mission of the New Hampshire Estuaries Project is to promote, protect, and enhance the environmental quality of the state's estuaries. Continuing growth and development in the region makes realizing this mission all the more challenging. Participants in the three-year planning process mapped out a vision for the estuaries in 2005 and beyond. This future includes:

GBNERR

Sailing on Great Bay

- Cleaner water;
- Regional development patterns that protect water quality, maintain open space and important habitat areas, and preserve the beauty and views of the estuaries;
- More healthy shellfish beds open to recreational harvest; and
- Restoration and enhancement of important habitat areas that have been altered or degraded.

Teams of citizens, resource professionals, and state and local officials have developed a detailed series of steps, or Action Plans, to make this vision a reality. These Action Plans are the heart of this *Plan*.

New Hampshire's Great Bay and coastal estuaries are dynamic, complex systems. Their location and wealth of resources have drawn human activity since pre-colonial times. Their beauty, diversity, and productivity make New Hampshire's estuaries treasure troves of natural and cultural heritage. The people who live, work, and visit within the watersheds of the estuaries are part of this sensitive ecosystem, and the health and future of these unique resources are in our hands.

The greatest environmental risks to the estuaries are from population growth and development, which can have significant impacts on water quality and living resources, and can result in loss and fragmentation of habitat and open space. The health of the estuaries, in turn, affects human health and well-being, as well as the economic, recreational, and cultural opportunities of people in the Seacoast region and the state. Recreation and tourism,

S. MIRICK

Adams Point, Great Bay

important economic activities for the New Hampshire Seacoast, depend on clean water and healthy estuaries. The New Hampshire Estuaries Project aims to provide the support and tools for this generation of residents to be careful stewards of the estuaries.

The Office of State Planning projects Rockingham County will grow by nearly 140,000 people by 2020, or 35% of all statewide growth. Rockingham and Strafford Counties are part of a four-county area that makes up less than 33% of the state's land area, but will host 85% of the state's population growth from 1997-2020. These two counties are home to New Hampshire's estuaries and their watersheds, which are the focus of this *Plan*.

The *Plan* uses water quality to chart a practical course for achieving NHEP goals for the estuaries. Clean water is the critical element for healthy estuaries and is the focus of the Action Plans developed to address those threats. Protecting and improving water quality requires both correcting existing problems that degrade water quality, and preventing future problems. NHEP has chosen to focus on improving water quality as the most effective way to attain broad measurable results, and to communicate the need to protect all aspects of environmental quality.

Environmental quality encompasses a broad and interrelated range of issues and problems. All healthy organisms – including humans – and their habitats require clean water. People need clean water to enjoy the estuary and its abundant living resources, whether as a source of food, of earning a living, or for quality of life and recreation. NHEP's focus on water quality requires addressing the full range of issues affecting environmental quality of the estuaries, including pollution, land use, habitat protection and restoration, shellfish sanitation and resource management, and more.

PRIORITY CONCERNS

Reducing current pollution sources is not enough to ensure the protection and improvement of water quality. Prevention of future pollution is essential, and requires a discussion of how we use land, and how we can protect and restore habitats like freshwater and tidal wetlands, shorelands, and upland buffers and corridors. To address the priority problems outlined in Chapter 2, the New Hampshire Estuaries Project goals and actions focus on five areas of concern, all of which are interrelated:

ANMP

Sediment sampling: North Mill Pond, Portsmouth

1. **Water Quality:** Identify and eliminate or reduce pollution sources that degrade water quality;
2. **Land Use, Development, and Habitat Protection:** Work with municipalities within the estuarine watershed to ensure that land use policies and new development consider impacts on estuarine water quality and habitats;
3. **Shellfish Resources:** Open shellfish beds that have been closed due to pollution or lack of testing to certify shellfish safety for human consumption;
4. **Habitat Restoration:** Protect and restore viable and diverse habitats in the estuarine region;
5. **Outreach and Education:** Raise awareness and engage communities, government agencies, organizations, and individuals in responsible use and stewardship of the estuaries.

The NHEP visions of the future were formulated around the topics of water quality, land use, shellfish, habitat, and education. NHEP participants were then asked to identify steps needed to take us from where we are today to where we want to be in the future. These steps were developed into the individual action plans outlined in the *Plan*. The highest priority action plans will be implemented first, with high priority and priority action plans implemented as funding becomes available. To assess the success of the Action Plans, measureable objectives were developed and are presented on pages 3-7 to 3-17. *Appendix 3: Results of the NHEP Planning Process* details the development of the goals, objectives, and strategies of the *NHEP Management Plan*.

L. CHASE

Water quality sampling on the Cocheco River

Goals for Water Quality

To achieve **cleaner water**, the NHEP established a set of specific goals with measurable, science-based standards. Actions to achieve these goals are detailed in *Chapter 4: Water Quality*.

- Ensure that New Hampshire's estuarine waters and tributaries will meet standards for pathogenic bacteria, including fecal coliform, *E. coli*, and *Enterococci* bacteria.
- Ensure that New Hampshire's estuarine waters, tributaries, sediments, and edible portions of fish, shellfish, other aquatic life, and wildlife will meet standards for metals, PCBs, oil and grease, PAHs, and other toxic contaminants.
- Ensure that New Hampshire's estuarine waters and tributaries will meet standards for organic and inorganic nutrients, specifically nitrogen, phosphorus, chlorophyll a (freshwater), dissolved oxygen, and biological oxygen demand (BOD).

Goals for Land Use, Development, and Habitat Protection

The goals for **land use** and **habitat protection** in the watersheds of the estuaries are critical to future environmental quality of the estuaries. See *Chapter 5: Land Use, Development, and Habitat Protection* for complete action plans.

- Ensure that the New Hampshire estuarine watersheds will have development patterns that protect estuarine water quality and preserve the rural quality of the waershed.
- Maximize the acreage and health of tidal wetlands in the coastal New Hampshire watershed.
- Protect freshwater and tidal shorelands by using buffers or setbacks along tidal and freshwater shorelands to safeguard estuarine water quality and other estuarine values such as habitat and scenic views.
- Protect estuarine water quality by ensuring that groundwater impacts are minimized.
- Maintain habitats of sufficient size and quality to support populations of naturally occurring plants, animals, and communities.
- Allow no net loss of freshwater wetland functions in the New Hampshire coastal watershed.

Goals for Shellfish Resources

The goals for shellfish resources are specific and measurable. See *Chapter 6: Shellfish Resources* for complete action plans.

- Achieve sustainable shellfish resources by tripling the area of shellfish beds that are classified open for harvesting to 75% of all beds, and tripling the quantity of harvestable clams and oysters in New Hampshire's estuaries.

R. LANGAN

Adult oysters with juvenile settlement

- Assure that shellfish are fit for human consumption and support a healthy marine ecosystem.
- Provide opportunities and strategies for restoration of shellfish communities and habitat.
- Support coordination to achieve environmentally sound shellfish aquaculture activities.

Goals for Habitat Restoration

Habitat restoration goals are linked to those for water quality, shellfish, and land use and habitat protection. Action plans are detailed in *Chapter 7: Habitat Restoration*.

- Maintain habitats of sufficient size and quality to support populations of naturally occurring plants, animals, and communities.

Goals for Education and Outreach

Public education and outreach is another key component of the *Plan* and its future success in meeting these ambitious environmental goals. Outreach efforts and goals are linked to and reinforce all other parts of the *Plan*. Civic leadership and public knowledge, stewardship, cooperation, participation, and demand for accountability will inform and guide the work of realizing these goals and objectives. Local governments, businesses, and organizations are key players in protecting New Hampshire's estuaries. Some goals depend on direct actions of citizens and landowners. Public participation and local knowledge contributed greatly to the *Plan's* development and are essential to its implementation.

Chapter 8: Public Outreach and Education outlines action plans for the first general outreach goal below. The chapters on water quality, land use, and shellfish include action plans for outreach goals dedicated to those topics.

- Raise awareness and engage participation of communities, government agencies, organizations, and individuals in the responsible use and stewardship of New Hampshire's estuaries.
- Engage the active participation of communities, government agencies, organizations, and individuals in achieving the goals for water quality; land use, habitat protection, and restoration; and shellfish for New Hampshire's estuaries.

Storm drain stencilling

J. PETERSON

WATER QUALITY OBJECTIVES

Goal #1: Ensure the New Hampshire's estuarine waters and tributaries will meet standards for pathogenic bacteria including fecal coliform, *E. coli,* and Enterocci.

MANAGEMENT OBJECTIVES

Objective 1

Achieve water quality in Great Bay and Hampton Harbor that meets shellfish harvest standards (14 counts of fecal coliform/100 ml) by 2010.

Objective 2

Minimize beach closures due to failure to meet water quality standards for tidal waters (Enterococci levels not exceeding 104 counts/ 100 ml. in any one sample).

Objective 3

Increase water bodies in the NH coastal watershed designated 'swimmable' by achieving state water quality standards (*E. coli* levels not exceeding 406 counts/100 ml in any one sample. For designated beaches, *E. coli* should not exceed 88 counts/100 ml.)

Objective 4

Reduce the number of known illicit connections in the NH coastal watershed by 50% by 2010.

Objective 5

Achieve 50% reduction of known illegal discharges into Great Bay, Hampton Harbor and the tributaries by 2010.

ACTION PLANS

WQ-3 Prioritize and upgrade facilities to reduce bacterial pollution from hydraulic overloading of wastewater treatment facilities. (High)

WQ-4A Establish ongoing training and support for municipal personnel in monitoring storm drainage systems for illicit connections. (Highest)

WQ-4B Assist seacoast communities in completing and maintaining maps of sewer and stormwater drainage infrastructure. (Highest)

SHL-2 Identify sources of and reduce or eliminate contaminants in NH's estuarine watersheds. (Priority)

SHL 5 Regularly collect and monitor water quality to identify sources and reduce or eliminate contaminants. (Highest)

WQ-4C Eliminate illicit connections in seacoast communties. (Highest)

WQ-5 Conduct shoreline surveys for pollution sources. (Highest)

WQ-6 Promote collaboration of state and local officials to locate and eliminate illegal discharges into surface waters. (High)

WQ-7 Provide incentives to fix or elimiate illegal direct discharges such as grey water pipes, failing septic systems, and agricultural runoff. (Highest)

WQ-8 Research the effectiveness of innovative stormwater treatment technologies. (Highest)

WQ-13 Provide septic system maintenance information directly to shoreline property owners. (Highest)

WQ-14 Encourage the use of alternative technologies for failing septic systems. (High)

Goal #2: Ensure the New Hampshire's estuarine waters, tributaries, sediments, and edible portions of fish, shellfish, other aquatic life, and wildlife will meet standards for priority contaminants such as, metals, PCBs, PAHs, and oil and grease.

MANAGEMENT OBJECTIVES

Objective 1

Develop baseline of toxic impacts on ecological and human health by tracking toxic contaminants in water, sediment, and indicator species: blue mussels (Gulfwatch); tomcod, lobsters and winter flounder (Coastal 2000).

Long-term: Reduce toxic contaminants levels in water, sediment and indicator species so that no levels persist or accumulate according to:

- FDA guideline levels
- State water standards in Ws 1700
- Sediment levels below ER-M levels

(References for standards found in Appendix 3.)

ACTION PLANS

WQ-2 Evaluate the suitability of UV alternatives to chlorine in wastewater post-treatment. (High)

WQ-4B Assist seacoast communities in completing and maintaining maps of sewer and stormwater drainage infrastructure. (Highest)

WQ-7 Provide incentives to fix or eliminate illegal direct discharges such as grey water pipes, failing septic systems, and agricultural runoff. (Highest)

SHL-6 Periodically collect and monitor shellfish tissue samples as appropriate for toxins and biotoxins. (Highest)

WQ-11 Revise state industrial discharge permit criteria in response to new processing technology and re-evaluate existing permits. (Priority)

WQ-12A Acknowledge and support the oil spill prevention and response activities of the Piscataqua River Cooperative. (Priority)

WQ-12B Enhance oil spill clean up efforts through predeployment infrastructure and development of high-speed current barriers. (High)

WQ-15 Support efforts to reduce deposition of atmospheric pollutants. (Priority)

Goal #3: Ensure the New Hampshire's estuarine waters and tributaries will meet standards for organic and inorganic nutrients, specifically nitrogen, phosphorous, chlorophyll A (freshwater), dissolved oxygen, and biological oxygen demand (BOD).

MANAGEMENT OBJECTIVES

Objective 1

Maintain inorganic nutrients, nitrogen, phosphorous and chlorophyll a in Great Bay, Hampton Harbor and their tributaries at 1998-2000 NERR baseline levels.

Objective 2

Maintain organic nutrients in Great Bay, Hampton Harbor and their tributaries at 1994-1996 NERR baseline levels.

Objective 3

Maintain dissolved oxygen levels at:

>4 mg/L for tidal rivers

>6 mg/L for embayments

(Great Bay and Little Bay)

> 7 mg/L for oceanic areas

(Hampton Harbor and Atlantic Coast)

Objective 4

Maintain NPDES permit levels for BOD at wastewater facilities in the NH coastal watershed.

ACTION PLANS

WQ-1 Evaluate Wastewater Treatment Facility impacts on estuarine water quality and seek practical options at the state level for secondary and tertiary or alternative treatments. (High)

WQ-5 Conduct shoreline surveys for pollution sources. (Highest)

WQ-6 Promote collaboration of state and local officials to locate and eliminate illegal discharges into surface waters. (High)

WQ-7 Provide incentives to fix or eliminate illegal direct discharges such as grey water pipes, failing septic systems, and agricultural runoff. (Highest)

WQ-8 Research the effectiveness of innovative stormwater treatment technologies. (Highest)

WQ-9 Ensure water quality and quantity impacts from new development and redevelopment are minimized at the planning board stage. (High)

WQ-10 Research, revise, publish and promote the Stormwater Management and Erosion and Sediment Control Handbooks for Urban and Developing Areas. (Highest)

WQ-11 Revise industrial discharge permit criteria in response to new processing technology and re-evaluate existing permits. (Priority)

WQ-15 Support efforts to reduce deposition of atmospheric pollutants. (Priority)

LAND USE OBJECTIVES

Goal #1: The New Hampshire coastal watershed has development patterns that ensure the protection of estuarine water quality and preserve the rural quality of the watershed.

MANAGEMENT OBJECTIVES	ACTION PLANS
Objective 1 Minimize the amount of impervious surfaces and assess the impacts to water quality by: 1) Keeping the total impervious surface in each subwatershed below 10% of the total land area, and 2) Reducing stormwater runoff from future development in all sub-watersheds, especially where impervious surfaces already exceed 10%.	**LND-1** Prepare a report of current and future levels imperviousness for the subwatersheds of the NH coastal watershed. (Highest) **LND-2** Implement steps to limit impervious cover and protect streams at the municipal level. (Highest) **LND-3** Conduct research in coastal NH watersheds to examine the relationship between percent impervious cover and environmental degradation. (High) **LND-4** Prevent the introduction of untreated stormwater to wetlands by supporting the development of NH Minimum Impact Development guidelines. (High) **LND-5** Support the Natural Resource Out-reach Coalition programs. (Highest)
Objective 2 Minimize the total rate of land consumption in the NH coastal watershed (as measured by acres of developed land per capita). **Objective 3** Encourage 43 coastal watershed municipalities to actively participate in addressing sprawl.	**LND-6** Minimize urban sprawl in coastal watersheds. (Highest) **LND-6A** Develop a regional pilot partnership to create a smart growth vision among towns and Regional Planning Commissions in a single estuarine watershed. (Highest) **LND-6B** Conduct a comprehensive review of the 43 towns within the estuaries and coastal watershed area to determine land use policies that affect sprawl. (High) **LND-6C** Develop and maintain a comprehensive database or library of new smart growth funding programs. (High) **LND-6D** Develop a science-based handbook and video on the nature, causes, and remedies of sprawl for audiences in coastal NH watershed. (Priority) **LND-6E** Actively participate and contribute to the develop of new smart growth planning tools with emphasis on protecting estuarine water quality. (High) **LND-6F** Assist communities that embrace a strong smart growth philosophy to conduct comprehensive reviews, identify sources of funding, provide public education, and implement new land use tools. (Highest)

Goal #2: Maximize the acreage and health of tidal wetlands in the New Hampshire coastal watershed.

MANAGEMENT OBJECTIVES

Objective 1

Allow no loss or degradation of 6200 acres of tidal wetlands in the NH coastal watershed and restore 300 acres of tidal wetlands degraded by tidal restrictions by 2010.

ACTION PLANS

LND-7 Complete rule-making and begin implementation of Recommended NH Wetland Mitigation Policy (High)

LND-8a Strengthen enforcement and effectiveness of the state tidal buffer zone through outreach to local officials and tidal shoreland property owners. (Priority)

LND-8b Amend state tidal buffer zone regulations to include regulation of deck construction. (Priority)

LND-9a Reduce the quantity, improve the quality, and regulate the timing of stormwater flow into tidal wetlands through policy changes at the NH DES Wetlands Bureau. (Highest)

LND-9b Reduce the quantity, improve the quality, and regulate the timing of stormwater flow into tidal wetlands through policy changes at the NH DES Site Specific Program. (Highest)

LND-10/RST-2
Using the Coastal Method and other techniques, identify and restore additional restorable tidal wetlands. (High)

LND-11/RST-5
Create a list of potential wetland restoration projects that could be used for wetland mitigation projects, and distribute the list to state agencies and Seacoast municipalities. (High)

LND-12/RST-6
Pursue restoration funding from the NH DOT, USDA/NRCS, US F&WS and other sources. (Highest)

RST-3 Continue to restore the restorable tidal wetlands listed in the NRCS report, Method for the Evaluation and Inventory of Vegetated Tidal Marshes in New Hampshire.

Goal #3: Protect freshwater and tidal shorelands to ensure estuarine water quality.

MANAGEMENT OBJECTIVES

Objective 1
Allow no new impervious surfaces or major disturbances of existing vegetation (except for water-dependent uses) in NH coastal watershed. In addition to state Shoreland Protection Act regulations, encourage additional reductions of shoreland impacts by 2010.

Objective 2
Allow no new establishment or expansion of existing contamination sources (such as salt storage, junk yards, solid waste, hazardous waste, etc.) within the shoreland protection area as tracked by the Department of Environmental Services.

ACTION PLANS

LND-13 Provide a framework specific and appropriate to the NH seacoast for defining and delineating urban and non-urban shoreland areas. (High)

LND-14 Develop and implement an outreach program to encourage and assist communities in developing and adopting land use regulations to protect undisturbed shoreland buffers. (Highest)

LND-15 Support land conservation efforts in shoreland areas. (Highest)

LND-17 Provide incentives for the relocation of grandfathered shoreland uses. (High)

LND-16 Improve enforcement of the state Comprehensive Shoreland Protection Act and other applicable shoreland protection policies through outreach to local officials and shoreland property owners. (Highest)

Goal #4: Protect estuarine water quality by ensuring that groundwater impacts are minimized.

MANAGEMENT OBJECTIVES

Initial Objective
Determine the extent of groundwater resources and their contaminant load to Great Bay and Hampton Harbor by 2005.

Objective 2
Reduce and eliminate groundwater contaminants based on outcome of Objective 1 by 2010.

ACTION PLANS

LND-18 Locate and quantify quantity and quality of groundwater inflow to the estuaries. (Highest)

LND-19 Locate, reduce or eliminate, and also prevent groundwater contaminants. (Highest)

Goal #5: Allow no net loss of freshwater wetlands functions in the NH coastal watershed.

MANAGEMENT OBJECTIVES

Objective 1
Determine indicators for freshwater wetland functions.

Objective 2
Establish state and municipal regulatory framework necessary to prevent introduction of untreated stormwater into tidal and freshwater wetlands by 2010.

Objective 3
Increase use of buffers around wetlands in NH coastal watershed

ACTION PLANS

LND-4 Prevent the introduction of untreated stormwater to wetlands by supporting the development of NH Minimum Impact Development Guidelines. (High)

LND-20 Develop and implement a Wetlands Buffer Outreach Program for planning boards. (High)

LND-21 Prevent the introduction of untreated stormwater to freshwater wetlands by enacting legislation giving NHDES authority to regulate stormwater discharge to wetlands. (High)

LND-22 Prevent the introduction of untreated stormwater to wetlands by strengthening municipal site plan review regulations. (High)

LND-23 Prevent the introduction of untreated stormwater to wetlands through an increased understanding of stormwater impacts on wetland ecology. (Priority)

LND-24 Work with NHDES to encourage adoption of state wetlands mitigation policy. (High)

LND-25 Encourage municipal designation of Prime Wetlands and 100-foot buffers (or equivalent protection). (High)

LND-25a Create a traveling Prime Wetlands display. (Priority)

LND-25b Provide training for towns interested in utilizing the NH Method for Comparative Evaluation of Non-tidal Wetlands. (Highest)

LND-25c Work with local planning boards and conservation commissions on regulatory approaches to wetlands conservation. (High)

LND-25d Create and/or enhance local land conservation programs with emphasis on high value wetlands and buffers. (High)

Goal #6: Maintain habitats of sufficient size and quality to support populations of naturally occurring plants, animals, and communities.

MANAGEMENT OBJECTIVES	ACTION PLANS
Objective 1 Determine existing acres of permanently protected land in the NH coastal watershed in the following categories: tidal shoreland, large contiguous forest blocks, wetlands with high habitat values, freshwater shorelands, rare and exemplary natural communities, by 2005. **Objective 2** Increase acreage of protected land containing significant habitats in the NH coastal watershed, through fee acquisition or conservation easements by 2010.	**LND-26** Support implementation of state and federal land protection programs. (Highest) **LND-27** Support the Great Bay Resource Protection Partnership. (Highest) **LND-28** Encourage towns to dedicate current-use change tax penalties to land protection. (Highest) **LND-29** Provide technical assistance in land protection and management to regional land trusts and conservation commissions. (High) **LND-35** Maintain current-use program. (Highest) **LND-36** Encourage conservation easements. (Highest)
MANAGEMENT OBJECTIVES	**ACTION PLANS**
Objective 3 Support completion of state biomonitoring standards and increase the miles of rivers and streams meeting those standards by 2010.	**LND-30** Develop and encourage use of biomonitoring standards to evaluate water quality.(High) **LND-31** Use biomonitoring and water quality monitoring to prioritize watershed areas for protection and remediation. (High)
MANAGEMENT OBJECTIVES	**ACTION PLANS**
Objective 4 Increase use of buffers around wildlife areas and maintaining contiguous habitat blocks in the NH coastal watershed by 2010.	**LND-32** Encourage municipalities to incorporate wildlife habitat protection into master plans by supporting NH F&G manual on Identifying and Protecting Significant Wildlife Habitat. (Highest) **LND-33** Develop a model local planning approach to encourage identification and maintenance of contiguous habitat blocks. (Highest) **LND-34** Encourage appropriate buffers around important wildlife areas and rare or exemplary natural communities. (High)

SHELLFISH OBJECTIVES

Goal #1: Achieve sustainable shellfish resources by tripling the area of shellfish beds that are classified open for harvesting to 75% of all beds, and tripling the quantity of harvestable clams and oysters in NH's estuaries

MANAGEMENT OBJECTIVES

Objective 1

Maintain an approved National Shellfish Sanitation Program supported by the State.

Objective 2

Increase soft shell clam beds in Great Bay, Little Bay, and Hampton Harbor that are open for harvest to 2500 acres by 2010.

Objective 3

Shellfish Acreage: No net decrease in acreage of oyster beds from 1997 amounts for Nannie Island, Woodman Point, Piscataqua River, Adams Point, Oyster Squamscott and Bellamy Rivers.

Objective 4

Shellfish density

A) Oysters: No net decrease in oysters (>80 mm) / square meter from 1997 amounts at Nannie Island, Woodman Point, Piscataqua River, Adams Point, and Oyster River.

B) Clams: No net decrease in adult clams (>50 mm) / square meter from the 1989-99 10-year average at Common Island, Hampton River, and Middle Ground.

Objective 5

Shellfish Assessment: Survey each major oyster and soft-shell clam bed at a minimum of every 3 years for dimensions, density and population structure.

ACTION PLANS

SHL-1 Implement National Shellfish Sanitation Program guidance to develop an FDA-certified shellfish program. (Highest)

SHL-2 Identify sources of and reduce or eliminate contaminants in NH's estuaries watersheds. (Priority)

SHL-3 Institute land use practices in estuarine watersheds that improve water quality and shellfish habitat. (Priority)

SHL-4 Enhance funding to maintain a comprehensive shellfish program (Highest)

SHL-5 Regularly collect and monitor water quality to identify sources and reduce or eliminate contaminants. (Highest)

SHL-6 Periodically collect and monitor shellfish tissue samples as appropriate for toxins and biotoxins. (Highest)

SHL-7 Maintain an ongoing shellfish resource assessment program. (Highest)

SHL-8 Develop and implement a plan for shellfish resource enhancement and habitat restoration. (Highest)

SHL-9A Decrease shellfish resource depletion and increase productivity with stricter state penalties for illegal harvesting. (Priority)

SHL-9B Increase outreach and education about methods to control shellfish predators. (Priority)

SHL-9C Explore alternative recreational shellfish harvest methods. (Priority)

SHL-9D Increase productivity by discouraging the harvest of immature shellfish. (Priority)

Goal #2: Assure that shellfish are fit for human consumption and support a healthy marine ecosystem.

MANAGEMENT OBJECTIVES	ACTION PLANS
Objective 1 Achieve water quality in Great Bay and Hampton Harbor that will meet shellfish harvest standards by 2010.	**SHL-1** Implement National Shellfish Sanitation Program guidance to develop an FDA-certified shellfish program. (Highest) **SHL-2** Identify sources of and reduce or eliminate contaminants in NH's estuaries watersheds. (Priority) **SHL-3** Institute land use practices in estuarine watersheds that improve water quality and shellfish habitat. (Priority) **SHL-5** Regularly collect and monitor water quality to identify sources and reduce or eliminate contaminants. (Highest) **SHL-6** Periodically collect and monitor shellfish tissue samples as appropriate for toxins and biotoxins. (Highest)

Goal #3: Provide opportunities and strategies for restoration of shellfish communities and habitat.

MANAGEMENT OBJECTIVES	ACTION PLANS
Objective 1 Restore 20 acres of oyster habitat in Great Bay and its tidal tributaries.	**SHL-8** Develop and implement a plan for shellfish resource enhancement and habitat restoration. (Highest)

Goal #4: Support coordination to achieve environmentally sound shellfish aquaculture activities.

MANAGEMENT OBJECTIVES	ACTION PLANS
Objective 1 Ensure that aquaculture practices do not adversely impact water quality or ecological health of NH's estuaries.	**SHL-1** Implement National Shellfish Sanitation Program guidance to develop and maintain an FDA-certified shellfish program. (Highest) **SHL-15** Evaluate and address barriers to aquaculture and promote environmentally sound practices. (Highest)

HABITAT RESTORATION OBJECTIVES

Goal #1: Maintain habitats of sufficient size and quality to support populations of naturally occurring plants, animals, and communities.

MANAGEMENT OBJECTIVES

Objective 1

Increase the acreage of restored estuarine habitats by 2010.

Salt marsh: Restore 300 acres of salt marsh with tidal restrictions.

Eelgrass: Restore 50 acres of eelgrass in Portsmouth Harbor, Little Bay, and the Piscataqua, Bellamy and Oyster rivers.

Shellfish habitat: Restore 20 acres of oyster habitat in Great Bay and the tidal tributaries.

ACTION PLANS

RST-1 Develop and implement a plan for shellfish resource enhancement and habitat restoration. (Highest)

RST-2 Using the coastal method and other techniques, identify and restore additional restorable tidal wetlands. (High)

RST-3 Continue to restore the restorable tidal wetlands listed in the NRCS report. (Highest)

RST-4 Identify and implement habitat restoration in important non-tidal habitats. (High)

RST-5 Create a list of potential wetland restoration projects that could be used for mitigation, and distribute to state agencies and municipalities. (High)

RST-6 Pursue restoration funding from NH DOT, USDA/NRCS, US F&WS and others. (Highest)

Seabrook Middle Ground Re-opened for Shellfishing as Water Quality Improves

Early in the morning of November 6, 1998, the Seabrook Middle Ground was reopened to clamming for the first time in nearly ten years. Hundreds of shellfishers huddled against the pre-dawn chill at the Hampton State Boat Launch, waiting their turns in the small outboard launches that would run them across the harbor to the best clamming in New Hampshire.

NHCP

Clamdiggers at the Middle Ground, Hampton-Seabrook Harbor

Those that turned out for the early morning low tide were rewarded with their 10-quart limit of softshell – or steamer – clams with just a few minutes of digging. NH Fish and Game officials estimated 800 clammers dug their limits of clams in the first two days of the season, harvesting 2% of the Middle Ground's standing stock of two-inch clams.

Reclassification of the Middle Ground resulted from marked water quality improvements in Hampton-Seabrook Harbor due largely to increased municipal sewerage coverage in the town of Seabrook, and other smaller scale pollution control measures around the Harbor. The NH Estuaries Project, NH Department of Health and Human Services, NH Fish and Game Department, NH Office of State Planning, NH Department of Environmental Services; the towns of Seabrook, Hampton, and Hampton Falls; North Atlantic Energy Service Corporation (Seabrook Station); and volunteers from Great Bay/Coast Watch and area towns all cooperated in these efforts to test water, and identify sources, and reduce pollution.

Reclassification of the 40 acres of the Seabrook Middle Ground significantly increased the harvest area and number of shellfish available for recreational harvest by New Hampshire residents. However, safety zones near wastewater treatment plants and as yet unclassified areas of the Harbor's tributaries within the Harbor area remain closed.

THE WORK HAS BEGUN

From the beginning of the New Hampshire Estuaries Project, the Management Committee has solicited and listened to concerns, priorities, and suggestions from the public. Work was begun even during the three-year planning process on the highest-priority goals and objectives to address priority problems. Progress has been made on water quality surveys, identification and correction of water pollution sources, development and implementation of a new shellfish resource management program, work with local officials on land use issues, salt marsh restoration efforts, and more.

In the first three years the NHEP awarded 27 technical assistance grants for projects addressing water quality and habitat improvements, and planning and outreach efforts throughout the region. Municipalities, citizen groups, environmental organizations, the academic and research communities, and state agencies working for environmental improvements have all benefitted from the NHEP grants program.

Municipal officials in the Seacoast gained a new tool for land and habitat conservation and water resource management through the NHEP Critical Lands Analysis project. Each of the 19 NHEP Zone A towns (those with tidal frontage) received local and regional scale maps identifying high-value natural resource areas that might be especially vulnerable to development pressures.

The NHEP has taken an active role in water pollution identification and clean-up work throughout the Seacoast. NHEP has helped the NH DES step up their non-point source investigations, resulting in the identification of numerous cross connections and illegal discharges to the estuaries. With NHEP support, NH DES, NH DHHS, and NH OSP have increased their shoreline and sanitary survey activities.

Over 500 acres of shellfish waters in the Hampton-Seabrook Estuary and Lower Little Bay were opened to recreational harvesting as a result of this increased monitoring, investigation, and identification and clean up of pollution sources.

A new, coordinated state shellfish sanitation program is being implemented. The NHEP identified the health of shellfish populations and habitat as a high priority, and as a unifying outreach focus to advance the cause of clean water. Increasing the acreage of classified and open softshell clam and oyster beds is central to the vision for New Hampshire's estuaries. The NHEP and its shellfish team determined a restructured and more coordinated state shellfish sanitation program was needed to achieve this goal. All state agencies involved in various aspects of shellfish and water quality monitoring and management were represented on the shellfish project team, along with scientists from the University of New Hampshire's Jackson Estuarine Laboratory and citizens interested in shellfishing. From these discussions, the NH Department of Environmental Services spearheaded a collaborative, inter-agency effort to develop and obtain resources for a restructured shellfish sanitation program, which is outlined in Action SHL-1. Implementation of the seven-year plan began in 1999 when the Legislature reassigned authority for shellfish sanitation to NH DES.